

**Notice of Allowability**

Application No.

10/760,669

Examiner

Tianjie Chen

Applicant(s)

SBIAA, RACHID

Art Unit

2627

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Election filed on 08/08/2006.
2. ☒ The allowed claim(s) is/are 1-10.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☒ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

*Chen Tianjie*  
**TIANJIE CHEN**  
**PRIMARY EXAMINER**

## ***EXAMINER'S AMENDMENT***

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Election/Restrictions***

2. Restriction/Election requirement mailed on 07/11/2006 has been withdrawn.

### ***REASONS FOR ALLOWANCE***

3. The following is an examiner's statement of reasons for allowance:
  - With regard to independent claim 6, as the closest reference on record, Hasegawa et al (US 6,873,500) discloses a thin-film magnetic head in Fig. 1 including: an antiferromagnetic layer 4 (Column 13, line 11); pinned layer 3 (Column 13, line 19) exchange-coupled antiferromagnetic layer so as have magnetization direction; free layer 1 (Column 14, line 32) having changeable depending on an the fixed magnetization direction external magnetic field; and nonmagnetic layer 2 made of Cu (Column 14, lines 24-26) and disposed between the pinned layer and the free layer; the pinned layer including a multilayer part comprising: a first layer 12 formed from Cu (Column 14, lines 21-23); and an intermediate layer 16, disposed between the first layer and nonmagnetic layer, comprising partly oxidized ferromagnetic layer 16 (Column 13, lines 54-62); **but fails to show** that a sense current flows in a thickness direction of the free layer, and the intermediate layer is disposed between the first layer and nonmagnetic layer while contact therewith.
  - With regard to independent claims 1, 7, and 8; as the closest reference on record, Hasegawa et al (US 6,873,500) discloses a thin-film magnetic head

comprising: an antiferromagnetic layer; a pinned layer exchange-coupled antiferromagnetic layer as have magnetization direction; free layer having changeable depending on an the fixed magnetization direction external magnetic field; and a nonmagnetic layer disposed between the pinned layer and the free layer; the pinned layer including multilayer part comprising: a first layer formed from Cu; and an intermediate layer, disposed between the first and second layers, comprising a partly oxidized ferromagnetic layer; **but fails to show** that a sense current flows in a thickness direction the free layer; a second layer formed from Cu and disposed closer to the free layer than is the first layer; and the intermediate layer is disposed between the first and second layers while in contact therewith.

- With regard to independent claims 9 and 10; as the closest reference on record, Hasegawa et al (US 6,873,500) discloses a thin-film magnetic head comprising: an antiferromagnetic layer; a pinned layer exchange-coupled antiferromagnetic layer as have magnetization direction; free layer having changeable depending on an the fixed magnetization direction external magnetic field; and a nonmagnetic layer disposed between the pinned layer and the free layer; the pinned layer including multilayer part comprising: a first layer formed from Cu; and an intermediate layer, disposed between the first and second layers, comprising a partly oxidized ferromagnetic layer; **but fails to show** that a sense current flows in a thickness direction the free layer; second layer formed from nonmagnetic electrically conductive layer is disposed closer to the free layer than is the first layer; and the intermediate layer disposed between the first and second layers is in contact therewith.

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- Applicant asserts: in this invention “an intermediate layer comprising a partly oxidized ferromagnetic layer held between first and second layers formed from Cu, and thus formed multilayer part included pinned layer this aspect the present invention. This provides a greater number of interfaces between and ferromagnetic layer, thereby improving the resistance change” (Specification, P. 3).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

4. The prior art made of record in PTO-892 Form and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tianjie Chen whose telephone number is 571-272-7570. The examiner can normally be reached on 8:00-4:30, Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
**TIANJIE CHEN**  
**PRIMARY EXAMINER**